Carisma

The Ultra Quiet Fan Coil

Air Conditioning

Carisma CRC / CRR
Fan Coil Units

ICIM
Quality management systems
ISO 9001 – Cert. n° 0545/4

EUROVENT CERTIFIED PERFORMANCE
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SABIANA
ENVIRONMENTAL COMFORT

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THE ULTRA QUIET FAN COIL

In line with innovative trends and modern industrial design, the **Carisma** fan coil range meets today's demanding requirements of performance, size, acoustics, low energy, ease of installation and maintenance. The **Carisma** fan coil unit has been designed around a platform of models, versions and accessories, all of which have been independently tested and certified by Eurovent.

Designed around 5 different versions, the extensive range includes wall and ceiling mounted units, exposed or concealed with either tangential or centrifugal fan options, delivering one of the most versatile ranges of fan coils on the market today.

All ***CRC*** fan coils with centrifugal fans are equipped with electric motors which dramatically reduce electrical consumption of up to 40% comparative to previous models, with 6 speed motors as standard offering greater flexibility in the selection of products.

New market trends have also led to an extension of the four pipe model which now has a two row LTHW battery giving improved outputs at lower flow and return temperatures.

As a special option, the **Carisma** range can be fitted with a patented electronic filter featuring a class D rating according to Standard UNI 11254, with similar performances to the initial ones of a traditional mechanical filter featuring a class F9 rating according to Standard UNI EN 779.

A full range of adjustment and control devices is available including the FREE innovative patented wireless system, for rapidly obtaining correct environmental temperature and with an investment proportional to performances, comfort and desired measurement precision.

The **Carisma** model is complemented with a full range of accessories: various types of adjustment valves, sturdy support feet, rear covering panel for glass installation, additional electric heater, auxiliary condensate pump, fresh air intake louver, air inlet/outlet diffusers for fitted installations.

The ***CRR*** range with tangential fan combines a reduced dimension (183mm depth) with a modern aesthetic that perfectly suit with any kind of furnishing, while maintaining great performances in terms of sound and consumption.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Sabiana take part to the Eurovent program of fan coil performance certification.
The official figures are published in the web site
www.eurovent-certification.com and in the web site www.certiflash.com.
The tested performances are:

- Cooling total emission at the following conditions:
  - Water temperature +7°C E.W.T. +12°C L.W.T.
  - Entering air temperature +27°C dry bulb +19°C wet bulb
- Heating emission (2 pipe units) at the following conditions:
  - Entering water temperature +50°C
  - Entering air temperature +20°C
  - *Water flow rate as for the cooling conditions*
- Cooling sensible emission at the following conditions:
  - Water temperature +7°C E.W.T. +12°C L.W.T.
  - Entering air temperature +27°C dry bulb +19°C wet bulb
- Heating emission (4 pipe units) at the following conditions:
  - Water temperature +70°C E.W.T. +60°C L.W.T.
  - Entering air temperature +20°C

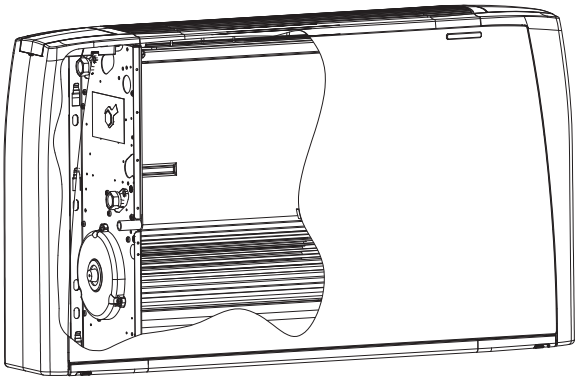
• Fan absorption • Water pressure drop • Sound power

Construction

Outer casing

Made from strong synthetic lateral corners and from galvanized and pre-painted frontal steel sheet.
The plastic top grid has fixed louvres and is reversible in order to distribute the air in two different directions.
Standard colours:

- Lateral corners and top grid: **Pantone Cool Grey 1C (light grey)**
- Frontal sheet: **RAL 9003 (white)**
- Other colours on request.



Inner casing

Made from galvanized steel with closed cell insulation.

Filter

Polypropylene cellular fabric regenerating filter.
The filter frame of galvanized steel is inserted into special plastic sliding guides fastened to the internal structure for easy insertion and removal of the filter.
Filter presence is highlighted by a plastic front cover featuring the same colour as the top grid.

Fan assembly

The tangential fan assembly is composed of two fan shrouds: an external one in PVC and an internal one of holed, shaped steel. The fan has an external diameter of 120mm and is the lenght of the coil. The fins are concave and are positioned in a spiral shape along the whole lenght of the fan.

Electric motor

The motor is wired for single phase and has three speeds, with capacitor.
The motor is fitted on sealed for life bearings and is secured on anti-vibration and self-lubricating mountings.
Internal thermal protection with automatic reset, protection IP 20, class B.

Coil

It is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process. The coil has two 1/2inch BSP internal connections and 1/8 inch BSP air vent and drain.
The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.
Flow and return pipe connections are situated at the same end on the left side looking at the unit. On request we can deliver the unit with the connections on the right end side: this must be specified on the order as this operation can not be carried out on site during installation.

Condensate collection tray

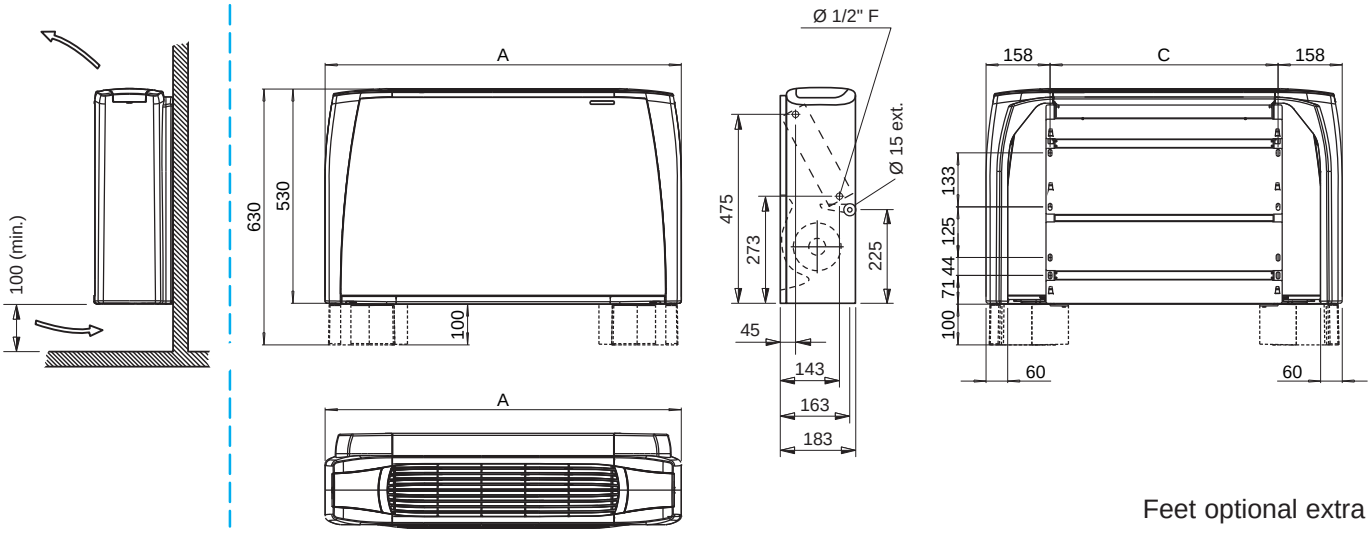
Made from plastic with an “L”-shape fitted on the inner casing.
The outside diameter of the condensate discharge pipe is 15mm.

Accessories and Controls

See pages 32 - 46.

Dimensions, Weight, Water content

MV

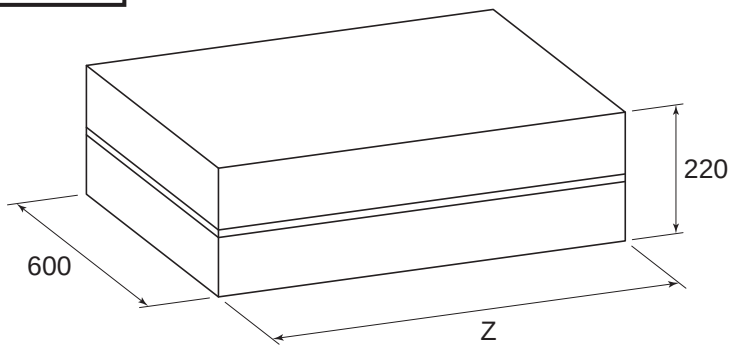


Feet optional extra

Dimensions (mm)

MODEL	1	2	3	4
A	670	770	985	1200
C	354	454	669	884
Z	720	820	1035	1250

PACKAGING



Weight (kg)

	Weight with packaging				Weight without packaging			
MODEL	1	2	3	4	1	2	3	4
	13	14	19	22	12	13	18	20

Water content (litres)

MODEL	1	2	3	4
	0,4	0,5	0,8	1,1

EUROVENT Certification

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The following standard rating conditions are used:

COOLING

Entering air temperature +27°C d.b. +19°C w.b.
Water temperature + 7°C E.W.T. +12°C L.W.T.

HEATING

Entering air temperature +20°C
Entering water temperature +50°C
Water flow rate as for the cooling conditions

MODEL		CRR 1			CRR 2			CRR 3			CRR 4		
Speed		1 (E)	2 (E)	3 (E)	1 (E)	2 (E)	3 (E)	1 (E)	2 (E)	3 (E)	1 (E)	2 (E)	3 (E)
		MIN	MED	MAX	MIN	MED	MAX	MIN	MED	MAX	MIN	MED	MAX
Air flow	m³/h	110	150	180	160	200	250	230	290	360	320	400	500
Cooling total emission (E)	kW	0,63	0,78	0,87	0,95	1,10	1,30	1,31	1,59	1,87	2,00	2,40	2,80
Cooling sensible emission (E)	kW	0,50	0,60	0,70	0,71	0,86	1,01	1,08	1,31	1,53	1,40	1,71	2,05
Heating (E)	kW	0,80	1,00	1,20	1,13	1,32	1,60	1,80	2,20	2,60	2,50	3,00	3,60
Dp Cooling (E)	kPa	6,0	9,0	11,0	11,5	15,5	20,0	4,4	6,3	7,8	11,0	14,5	20,0
Dp Heating (E)	kPa	4,0	5,5	7,0	9,5	12,5	16,5	4,0	5,0	7,0	10,5	14,1	18,8
Fan (E)	W	20	22	28	20	22	27	22	26	31	25	30	36
Sound power (E) Lw	dB(A)	34	37	42	34	39	45	34	39	45	34	40	46
Sound pressure (*) Lp	dB(A)	25	28	33	25	30	36	25	30	36	25	31	37

(E) = Eurovent certified performance. **MIN-MED-MAX** = Standard connected speeds.

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m³ room and a reverberation time of 0.5 sec.

Operation limits

Highest water inlet temperature.....+ 85 °C
Lowest water inlet temperature.....+ 5 °C
for entering water temperatures below + 5°C, contact "SABIANA" technical department
Highest working pressure.....1000 kPa (10 bars)

Water flow limits (l/h)

MODEL	CRR 1	CRR 2	CRR 3	CRR 4
Lowest	70	100	100	150
Highest	350	550	700	700

Motor electrical data (max. absorption)

MODEL		CRR 1	CRR 2	CRR 3	CRR 4
230/1	W	28	27	31	36
50Hz	A	0,127	0,122	0,14	0,163

Cooling emission of CRR units

Entering air temperature: 27°C – R.H.: 50%

MODEL	Speed		Qv	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
				Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)
			m³/h	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa
CRR 1	III	MAX	180	0,94	0,72	162	8,2	0,84	0,67	144	6,6	0,61	0,59	105	3,7	0,51	0,51	88	2,7
	II	MED	150	0,84	0,63	144	6,7	0,75	0,59	129	5,4	0,54	0,51	93	3,1	0,45	0,45	77	2,2
	I	MIN	110	0,68	0,50	117	4,6	0,60	0,47	103	3,7	0,44	0,40	76	2,1	0,36	0,36	62	1,4
CRR 2	III	MAX	250	1,40	1,03	241	23,1	1,25	0,97	215	18,8	0,93	0,85	160	11,0	0,74	0,74	127	7,3
	II	MED	200	1,19	0,86	205	17,2	1,06	0,81	182	14,0	0,79	0,71	136	8,3	0,62	0,62	107	5,3
	I	MIN	160	1,02	0,73	175	13,2	0,91	0,69	157	10,8	0,69	0,60	119	6,4	0,53	0,53	91	4,0
CRR 3	III	MAX	360	2,02	1,49	347	9,0	1,80	1,41	310	7,3	1,33	1,23	229	4,2	1,07	1,07	184	2,8
	II	MED	290	1,73	1,26	298	6,8	1,54	1,18	265	5,5	1,14	1,03	196	3,2	0,90	0,90	155	2,1
	I	MIN	230	1,41	1,01	243	4,8	1,26	0,95	217	3,9	0,94	0,83	162	2,3	0,73	0,73	126	1,5
CRR 4	III	MAX	500	3,02	2,18	519	23,0	2,70	2,05	464	18,8	2,03	1,79	349	11,2	1,58	1,58	272	7,1
	II	MED	400	2,55	1,82	439	17,1	2,28	1,71	392	14,0	1,72	1,49	296	8,4	1,31	1,31	225	5,1
	I	MIN	320	2,14	1,51	368	12,6	1,92	1,42	330	10,3	1,45	1,23	249	6,2	1,09	1,09	187	3,7

Cooling emission of CRR units

Entering air temperature: 26°C – R.H.: 50%

MODEL	Speed		Qv	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
				Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)
			m³/h	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa
CRR 1	III	MAX	180	0,83	0,67	143	6,6	0,73	0,63	126	5,1	0,56	0,56	96	3,2	0,47	0,47	81	2,3
	II	MED	150	0,74	0,59	127	5,4	0,65	0,55	112	4,2	0,49	0,49	84	2,5	0,41	0,41	71	1,8
	I	MIN	110	0,60	0,47	103	3,7	0,52	0,44	89	2,9	0,39	0,39	67	1,7	0,32	0,32	55	1,2
CRR 2	III	MAX	250	1,24	0,97	213	18,7	1,09	0,91	187	14,8	0,81	0,81	139	8,6	0,68	0,68	117	6,2
	II	MED	200	1,05	0,81	181	14,0	0,93	0,76	160	11,1	0,65	0,65	112	5,9	0,57	0,57	98	4,5
	I	MIN	160	0,91	0,69	157	10,8	0,80	0,64	138	8,6	0,57	0,55	98	4,6	0,48	0,48	83	3,4
CRR 3	III	MAX	360	1,79	1,41	308	7,3	1,57	1,32	270	5,7	1,17	1,17	201	3,4	0,98	0,98	169	2,4
	II	MED	290	1,53	1,18	263	5,5	1,34	1,11	230	4,3	0,98	0,98	169	2,5	0,82	0,82	141	1,8
	I	MIN	230	1,25	0,95	215	3,9	1,10	0,89	189	3,1	0,78	0,76	134	1,6	0,67	0,67	115	1,2
CRR 4	III	MAX	500	2,68	2,06	461	18,8	2,37	1,93	408	14,9	1,68	1,66	289	8,0	1,44	1,44	248	6,1
	II	MED	400	2,27	1,71	390	14,0	2,00	1,60	344	11,1	1,43	1,38	246	6,1	1,20	1,20	206	4,4
	I	MIN	320	1,91	1,42	329	10,3	1,69	1,33	291	8,2	1,21	1,14	208	4,5	0,99	0,99	170	3,2

Correction factors for different R.H.

R.H.	WT:	7/12°C	8/13°C	10/15°C	12/17°C
48%	Pc	0,95	0,94	1,00	1,00
	Ps	1,00	1,00	1,00	1,00
46%	Pc	0,90	0,88	1,00	1,00
	Ps	1,00	1,00	1,00	1,00

LEGEND

- **WT** = Water temperature
- **Pc** = Cooling total emission
- **Ps** = Cooling sensible emission
- **Qw** = Water flow
- **Dp(c)** = Water pressure drop
- **Speed** = Fan speed
- **MAX** = High speed
- **MED** = Medium speed
- **MIN** = Low speed
- **Qv** = Air flow

Cooling emission of CRR units

Entering air temperature: 25°C – R.H.: 50%

Model	Speed		Qv	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
				Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)
			m³/h	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa
CRR 1	III	MAX	180	0,73	0,63	126	5,2	0,62	0,59	107	3,9	0,51	0,51	88	2,8	0,42	0,42	72	1,9
	II	MED	150	0,65	0,55	112	4,2	0,55	0,52	95	3,2	0,45	0,45	77	2,2	0,37	0,37	64	1,5
	I	MIN	110	0,52	0,44	89	2,9	0,45	0,41	77	2,2	0,36	0,36	62	1,4	0,29	0,29	50	1,0
CRR 2	III	MAX	250	1,09	0,91	187	14,9	0,94	0,85	162	11,4	0,75	0,75	129	7,4	0,61	0,61	105	5,2
	II	MED	200	0,93	0,76	160	11,1	0,80	0,71	138	8,5	0,62	0,62	107	5,4	0,51	0,51	88	3,8
	I	MIN	160	0,80	0,64	138	8,6	0,69	0,60	119	6,6	0,53	0,53	91	4,0	0,43	0,43	74	2,8
CRR 3	III	MAX	360	1,57	1,32	270	5,7	1,34	1,23	230	4,3	1,07	1,07	184	2,9	0,88	0,88	151	2,0
	II	MED	290	1,34	1,11	230	4,4	1,15	1,03	198	3,3	0,90	0,90	155	2,1	0,74	0,74	127	1,5
	I	MIN	230	1,10	0,89	189	3,1	0,95	0,83	163	2,4	0,73	0,73	126	1,5	0,60	0,60	103	1,0
CRR 4	III	MAX	500	2,36	1,93	406	15,0	2,04	1,80	351	11,5	1,58	1,58	272	7,2	1,30	1,30	224	5,1
	II	MED	400	2,00	1,61	344	11,2	1,73	1,50	298	8,6	1,32	1,32	227	5,2	1,09	1,09	187	3,7
	I	MIN	320	1,68	1,33	289	8,2	1,46	1,24	251	6,4	1,09	1,09	187	3,8	0,90	0,90	155	2,7

Correction factors for different R.H.

R.H.	WT:	7/12°C	8/13°C	10/15°C	12/17°C
48%	Pc	0,95	0,94	1,00	1,00
	Ps	1,00	1,00	1,00	1,00
46%	Pc	0,90	0,88	1,00	1,00
	Ps	1,00	1,00	1,00	1,00

LEGEND

WT = Water temperature
Pc = Cooling total emission
Ps = Cooling sensible emission
Qw = Water flow
Dp(c) = Water pressure drop

Speed = Fan speed
MAX = High speed
MED = Medium speed
MIN = Low speed
Qv = Air flow

Heating emission of CRR units

Entering air temperature: 20°C

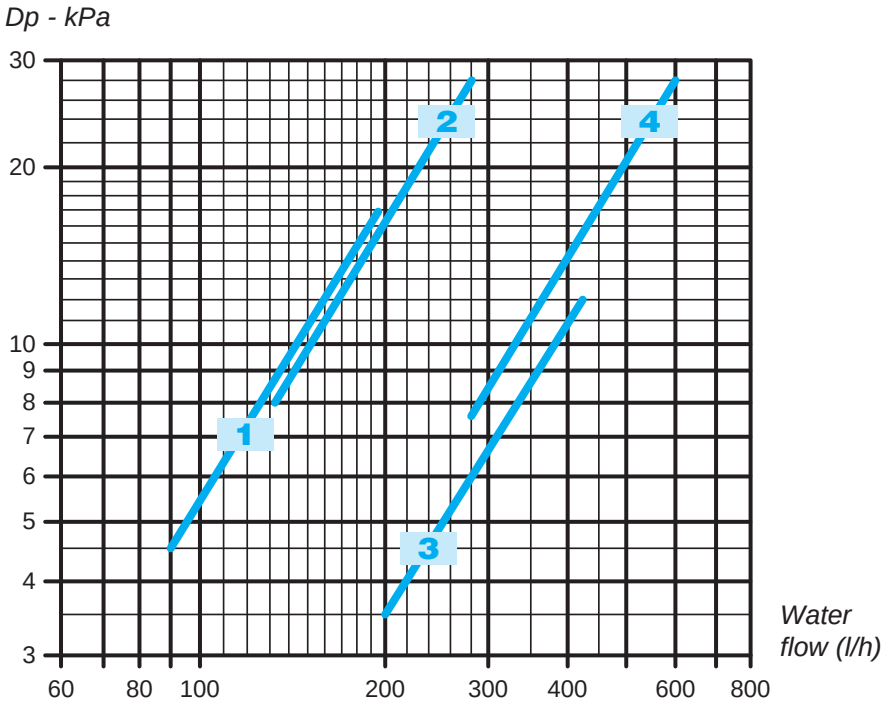
Model	Speed		Qv	WT: 70/60 °C			WT: 60/50 °C			WT: 50/40 °C			WT: 50/45 °C			WT: 45/40 °C		
				Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)
			m³/h	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa
CRR 1	III	MAX	180	2,03	175	8,9	1,54	132	5,7	1,06	91	3,0	1,24	213	13,3	1,00	172	9,3
	II	MED	150	1,78	153	7,0	1,35	116	4,5	0,93	80	2,4	1,09	187	10,6	0,88	151	7,4
	I	MIN	110	1,40	120	4,6	1,06	91	2,9	0,73	63	1,6	0,85	146	6,9	0,69	119	4,8
CRR 2	III	MAX	250	2,69	231	18,1	2,05	176	11,6	1,42	122	6,3	1,64	282	27,2	1,33	229	19,1
	II	MED	200	2,25	194	13,2	1,72	148	8,5	1,19	102	4,6	1,37	236	19,8	1,11	191	13,9
	I	MIN	160	1,91	164	9,9	1,46	126	6,4	1,01	87	3,5	1,17	201	14,9	0,95	163	10,5
CRR 3	III	MAX	360	4,57	393	8,8	3,49	300	5,6	2,41	207	3,0	2,79	480	13,2	2,26	389	9,3
	II	MED	290	3,80	327	6,3	2,90	249	4,1	2,01	173	2,2	2,32	399	9,5	1,88	323	6,7
	I	MIN	230	3,02	260	4,2	2,31	199	2,7	1,60	138	1,5	1,84	316	6,4	1,49	256	4,5
CRR 4	III	MAX	500	6,12	526	20,6	4,69	403	13,3	3,26	280	7,2	3,74	643	30,9	3,03	521	21,7
	II	MED	400	5,08	437	14,8	3,89	335	9,6	2,71	233	5,2	3,10	533	22,3	2,52	433	15,7
	I	MIN	320	4,22	363	10,7	3,24	279	6,9	2,26	194	3,8	2,58	444	16,1	2,09	359	11,3

LEGEND

WT = Water temperature
Ph = Emission
Qw = Water flow
Dp(c) = Water pressure drop

Speed = Fan speed
MAX = High speed
MED = Medium speed
MIN = Low speed
Qv = Air flow

Water pressure drop

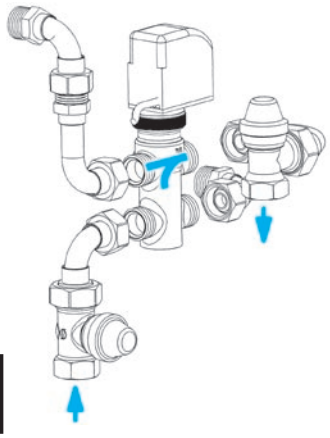


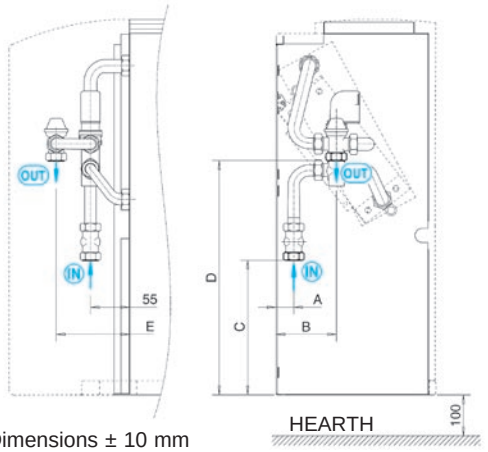
The water pressure drop figures refer to a mean water temperature of ***10°C;*** for different temperatures, multiply the pressure drop figures by the correction factors ***K.***

°C	20	30	40	50	60	70	80
K	0,94	0,90	0,86	0,82	0,78	0,74	0,70

VBP
main coil 3 way valve

Control valve kit:
3 way valve, ON-OFF,
with electric motor and mounting kit
with micrometric lockshield valve.





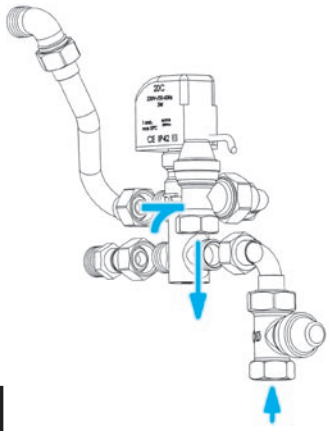
Dimensions ± 10 mm

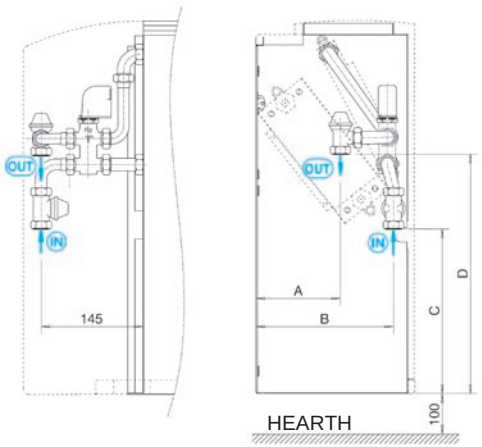
VERSION	CRC / CRR
MODEL	MV – MO – MVB – IV – IO

MOD.		Dimensions (mm)					Valve			Micrometric lockshield valve			Code	
		A	B	C	D	E	DN	(Ø)	Kvs	DN	(Ø)	Kvs	FITTED	NOT FITTED
CRC	1 ÷ 5	25	85	190	290	105	15	1/2”	1,6	15	1/2” F	2	9066561H	9066560H
	6 – 7	25	85	190	290	105	20	3/4”	2,5	15	1/2” F	2	9060471H	9060474H
	8 – 9	50	120	185	290	105	20	3/4”	2,5	15	1/2” F	2	9060471H	9060474H
CRR	1 ÷ 4	15	90	200	315	95	15	1/2”	1,6	15	1/2” F	2	9066561H	9066560H

VBA
additional coil 3 way valve

Control valve kit:
3 way valve, ON-OFF,
with electric motor and mounting kit
with micrometric lockshield valve.

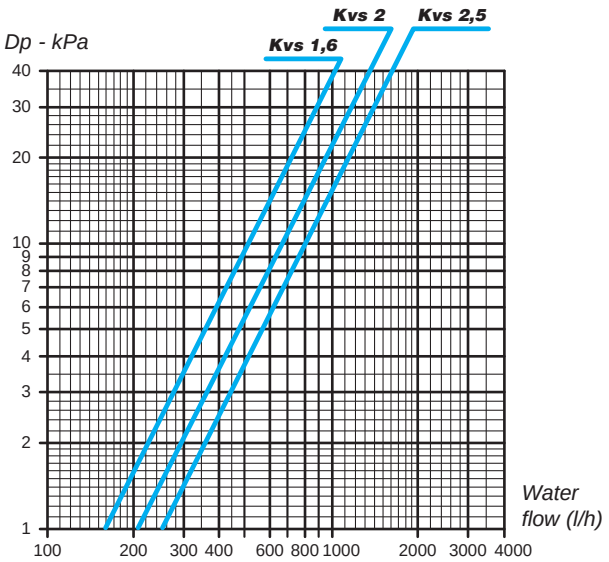




Dimensions ± 10 mm

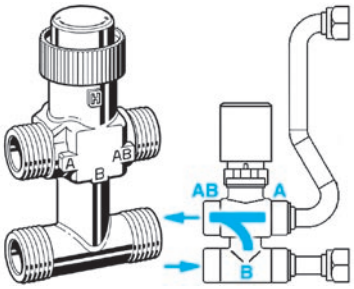
VERSION	CRC
MODEL	MV – MO – MVB – IV – IO

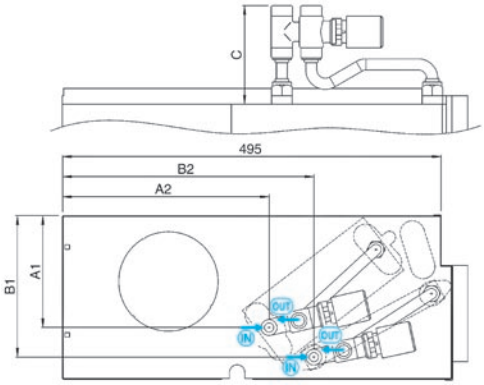
MOD.	Dimensions (mm)				Valve			Micrometric lockshield valve			Code	
	A	B	C	D	DN	(Ø)	Kvs	DN	(Ø)	Kvs	FITTED	NOT FITTED
1 ÷ 7	120	195	240	340	15	1/2”	1,6	15	1/2” F	2	9060472H	9060475H
8 – 9	135	200	235	330	15	1/2”	1,6	15	1/2” F	2	9060472H	9060475H



VS
simplified kit for 3 way valve *(concealed model only)*

3 way valve, (ON-OFF)
with electric motor and mounting kit.
Valve with flat connection
without micrometric lockshield valve.





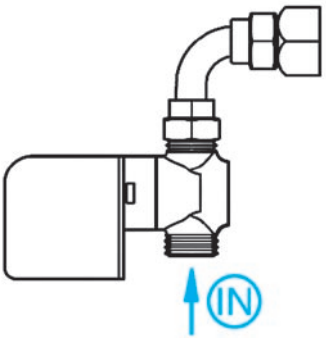
Dimensions ± 10 mm

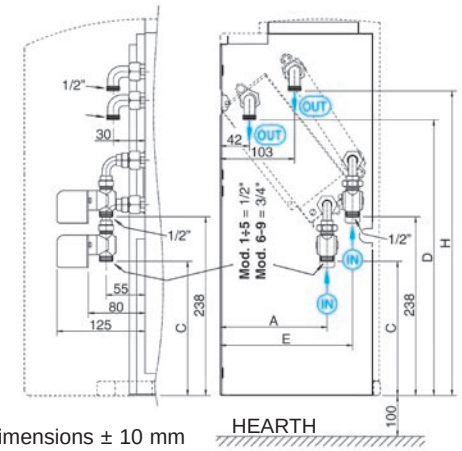
VERSION	CRC
MODEL	IV – IO

MOD.	Dimensions (mm)					MAIN					ADDITIONAL				
	MAIN		ADDITIONAL		C	Valve			Code		Valve			Code	
	A1	A2	B1	B2		DN	(Ø)	Kvs	FITTED	NOT FITTED	DN	(Ø)	Kvs	FITTED	NOT FITTED
1 ÷ 5	152	270	185	330	116	15	1/2"	1,6	9066571H	9066570H	15	1/2"	1,6	9060483H	9060480H
6 – 7	152	268	185	330	124	20	3/4"	2,5	9060484H	9060481H					
8 – 9	177	270	210	327	124	20	3/4"	2,5	9060484H	9060481H					

V2
2 way valve
for main and additional coil

Control valve kit:
2 way valve, ON-OFF,
with electric motor and mounting kit.

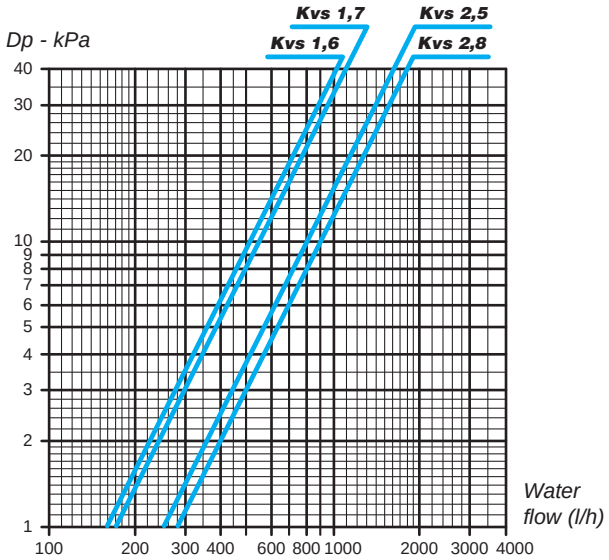




Dimensions ± 10 mm

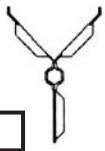
VERSION	CRC / CRR
MODEL	MV – MO – MVB – IV – IO

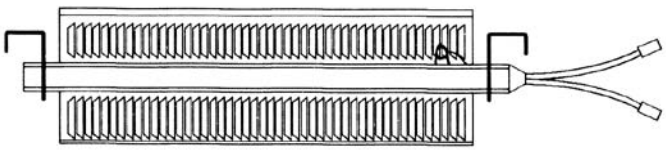
MOD.		Dimensions (mm)					MAIN					ADDITIONAL				
		MAIN			ADDITIONAL		Valve			Code		Valve			Code	
		A	C	D	E	H	DN	(Ø)	Kvs	FITTED	NOT FITTED	DN	(Ø)	Kvs	FITTED	NOT FITTED
CRC	1 ÷ 5	149	180	386	186	456	15	1/2"	1,7	9060476H	9060478H	15	1/2"	1,7	9060476H	9060478H
	6 – 7	150	181	438	186	456	20	3/4"	2,8	9060477H	9060479H					
	8 – 9	176	175	422	210	440	20	3/4"	2,8	9060477H	9060479H					
CRR	1 ÷ 4	143	178	448	–	–	15	1/2"	1,7	9060476H	9060478H	–	–	–	–	–



BEL electric heater
(not available with Crystall)

1 PHASE 230V
Electric heater with integral:
safety thermostat and relay control.

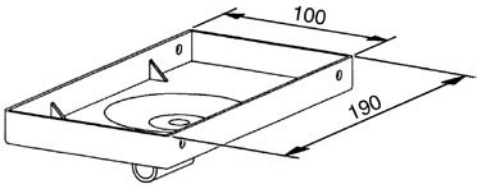




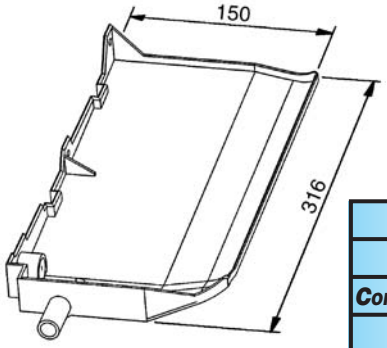
VERSION	CRC												
MODEL	MV – MO – MVB – IV – IO												
SIZE	1	2			3 – 4			5 – 6			7 – 8 – 9		
WATT	650	1000	600	400	1500	900	600	2000	1250	750	2500	1500	1000
CODE	9066491	9066492	9066482	9066472	9066493	9066483	9066473	9066495	9066485	9066475	9066497	9066487	9066477

Extension condensate collection tray to cover valve assembly

BSV
(for vertical units)



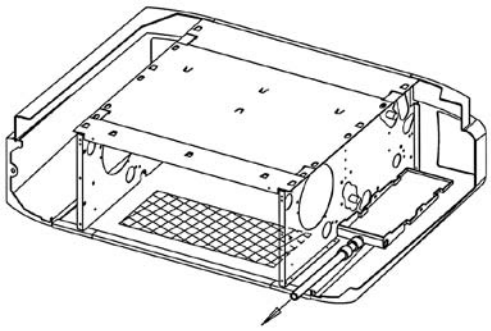
VERSION	CRC	CRR
MODEL	MV – MVB – IV *(vertical)*	MV
CODE	6060400	6062125

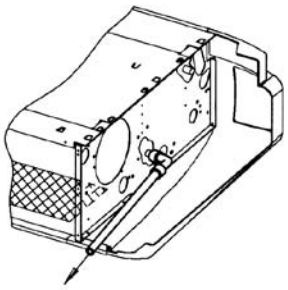


BSO
(for horizontal units)

VERSION	CRC	
MODEL	MO – IO *(horizontal)*	
CONNECTION SIDE	LEFT	RIGHT
TYPE	BSO-SX	BSO-DX
CODE	6060402	6060403

SCR plastic condensate drain pipe with fast connection
(allows correct condensate drain)



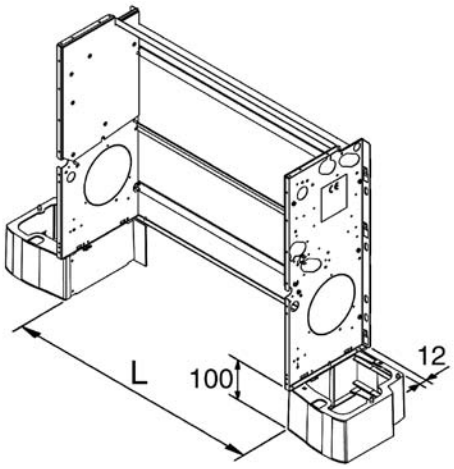


VERSION	CRC
MODEL	MO – IO
CODE	6060420

PAP feet

VERSION	CRC / CRR
MODEL	MV

SIZE		L	CODE	
CRC	CRR		CRC	CRR
1	1	330	9066351	9068101
2	2	430	9066351	9068101
3 – 4	3	645	9066351	9068101
5 – 6	4	860	9066351	9068101
7	–	1119	9066351	–
8 – 9	–	1119	9066358	–



Electrical diagrams are shown on the installation, use and maintenance manual

CONTROL OPERATIONS / CONTROL IDENTIFICATION	ON-OFF switch	ON-OFF switch for CRYSTALL electrostatic filter or electric heater	Manual 3 speed switch	Manual/Automatic 3 speed selection	Summer/Winter switch	Remote centralized Summer/Winter switch or by an automatic change-over fitted on the water pipe	Automatic Summer/Winter switch with neutral zone for 4 pipe installation with 2 valves	Room thermostat for fan control (ON-OFF)	Room thermostat for 1 valve control (2 pipe installation)	Room thermostat for 2 valve control (4 pipe installation)	Simultaneous thermostatic control of the valves and fan	Room thermostat for chilled water valve (SUMMER) and electric heater (WINTER) control (in winter only the electric heater is working)	Room thermostat for fan and electric heater control (not for CRYSTALL)	Installation of electronic low temperature CUT-OUT thermostat (TME)	Installation of bimetallic low temperature CUT-OUT thermostat (TMM)	CONTROL CODES
CRC / CRR — MV – MVB															
CB-AU-IAQ	●	●	●	●	●	●	●	●	●	●	●	●	●	●	9066307
CB-R-IAQ	●	●	●		●	●		●	●	●		●		●	9066306
CB-IAQ	●	●	●												● 9066305
CB-AU	●		●	●	●	●	●	●	●	●	●	●	●	●	9066303
CB-C	●		●			●		●	●	●		●		●	9066302
CB-T	●		●		●			●	●	●		●			● 9066301
CB	●		●												● 9066300
CRC — MO – IV – IO															
TMO-T-AU-IAQ	●	●	●	●	●	●	●	●	●	●	●	●		●	9063023
TMO-T-IAQ	●	●	●		●	●		●	●	●		●		●	9063021
MO-3V-IAQ	●	●	●												● 9063020
T2T	●		●		●			●	●		●				9060174
TMO-DI	●	●	●	●	●	●	●	●	●	●	●	●	●	●	9060165
TMO-503-SV2	●		●	●	●		●		●	●	●			●	9060173
TMO-503-S	●		●	●	●			●						●	9060171
TMO-T-AU	●		●	●	●	●	●	●	●	●	●	●		●	9060164
TMO-T	●		●		●	●		●	●	●		●		●	9060161
CR-T	●		●		●			●	●	●		●			● 9066330
MO-3V	●		●												● 9060160

IDENTIFICATION	CODE
CB	9066300

- ON-OFF switch and 3 speed switch.
- Without thermostatic control.
- It allows to control the low temperature cut-out thermostat (TMM).

IDENTIFICATION	CODE
CB-T	9066301

- ON-OFF switch.
- 3 speed switch.
- Summer/Winter switch.
- Electronic room thermostat for fan or valves control (ON-OFF).
- It allows to control the low temperature cut-out thermostat (TMM).
- It allows to control the chilled water valve (ON-OFF) and the electric heater (BEL) only in case that hot water is not used in winter (otherwise please use CB-R-IAQ control with on/off switch for the electric heater).

IDENTIFICATION	CODE
CB-C	9066302

- ON-OFF switch.
- 3 speed switch.
- It allows to control the summer or winter cycle with centralized and remote switch, or an automatic change-over fitted on the water pipe (for 2-tube installations only).
- Electronic room thermostat for fan or valves control (ON-OFF).
- It allows to control the low temperature cut-out thermostat (TME).
- It allows to control the chilled water valve (ON-OFF) and the electric heater (BEL) only in case that hot water is not used in winter (otherwise please use CB-R-IAQ control with on/off switch for the electric heater).

IDENTIFICATION	CODE
CB-AU	9066303

- Manual or automatic speed switch: on Auto Mode there is the automatic speed selection in accordance to the difference between room temperature and setpoint. When the setpoint is reached the fan go on OFF.
- Summer/Winter switch.
- Electronic room thermostat for valve(s) control (ON-OFF).
- Simultaneus thermostatic control of the valves and fan.
- It allows to control the low temperature cut-out (TME).
- It allows to control the chilled water valve (ON-OFF) and the electric heater (BEL) only in case that hot water is not used in winter (otherwise please use CB-AU-IAQ control with on/off switch for the electric heater).
- It allows to control the summer/winter cycle with a centralized and remote switch or with an automatic change-over fitted on the water pipe (for 2-tube installations only).

N.B.: with 4 pipe installations and continuous chilled and hot water supply, it allows the automatic summer/winter change-over in accordance to the room temperature (-1°C = Winter, +1°C = Summer, Neutral Zone 2°C).

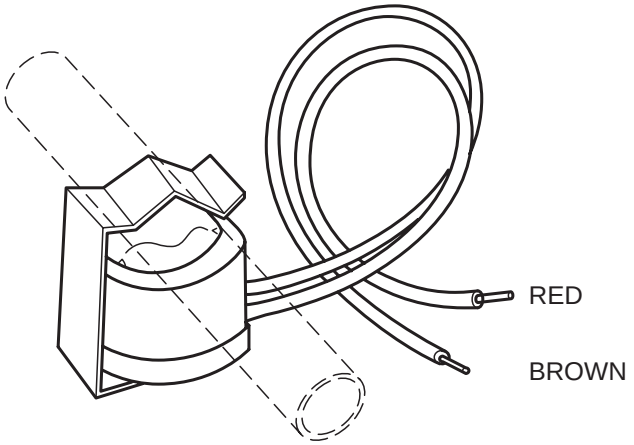
TME low temperature cut-out thermostat

To be fitted between the coil fins; when connecting the control,
the TME probe cable must be separated from the power supply wires.
To be used with the following controls:
CB-C, CB-AU, TMO-T, TMO-T-AU, TMO-DI and corresponding IAQ controls.
It stops the fan when
the water temperature is lower than 38°C
and it starts the fan when is higher than 42°C.

VERSION	CRC / CRR
MODEL	MV – MO – MVB – IV – IO
CODE	3021091

TMM low temperature cut-out thermostat

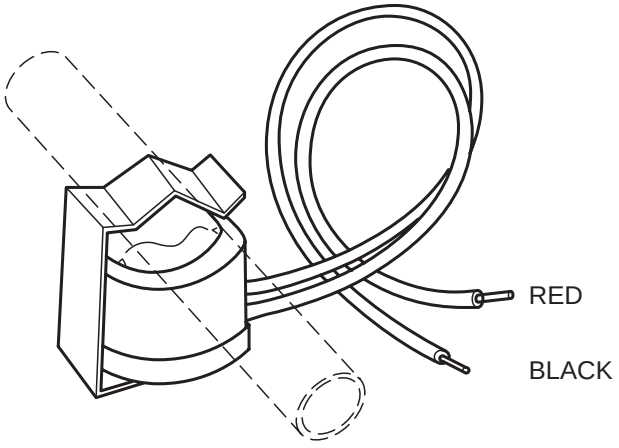
To be installed in contact with the hot water circuit.
To eliminate cold air blow.
Installed by the installing engineer.
To be used with the following controls:
CB, CB-T, CB-IAQ, MO-3V, CR-T, MO-3V-IAQ.
For units working on heating only.
It stops the fan when
the water temperature is lower than 30°C
and it starts the fan when is higher than 38°C.



VERSION	CRC / CRR
MODEL	MV – MO – MVB – IV – IO
CODE	9053048

Change-Over CH 15-25

Automatic summer/winter switch
to be installed in contact with the water circuit.
For 2-tube installations only
(not to be used with 2 way valve).
To be used with the following controls:
CB-C, CB-AU, TMO-T, TMO-T-AU, TMO-DI.



VERSION	CRC / CRR
MODEL	MV – MO – MVB – IV – IO
CODE	9053049

FreeSabiana

Free Sabiana is an innovative, **fully wireless,** electronic system for use with fan coil units, based on radio communication.

This technology **provides installation flexibility and a more accurate measurement of the room temperature.** The probe can be moved until the most suitable position is found, without the worry of changes in the environment layout and of its furniture and also without mounting it on a wall. If a new fan coil unit is added, no electrical wiring for the control system is required: just define the control unit and the probe which regulates it. The improved measurement accuracy derives from the possibility to position the probe near the typical location of the user: this enables to keep the temperature exactly at the required value with more energy savings compared with a traditional measurement system.

Transmission is based on communication protocol IEE802.15.4, the most suitable way to transmit a relatively low amount of information with very low consumption and high reliability.

The system has been certified by a leading independent body, officially recognized by the EU authorities and its sale has been authorized in all the EU and EFTA countries.

Main components

Free Sabiana includes 3 main components:

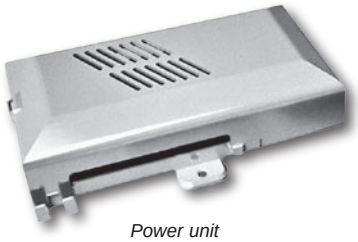
- A remote **control** which features a button panel and LCD display and can be wall-mounted or positioned on a dedicated table support.
  It enables the control of all the operating variables of the fan coil units in different configurations. The control is battery powered.
  The temperature and the operating speed of the fan coil unit are set with two large buttons featuring user friendly graphics.

Description	Identification	Code
Remote control	Free-Com	9060572

Control unit with support

- A **power unit** to be installed on the fan coil (fan coil interface).
  It controls the fan and the valves of the fan coil. The power unit is connected to the electric supply.
  The power unit receives the information required to control the fan coil both from the remote control and locally, such as the temperature of the coil.

Description	Identification	Code
Power unit fitted on the unit	Free-Upm	9060571
Power unit not fitted on the unit	Free-Ups	9060570



Power unit

- A room **temperature probe,** which can be wall-mounted or positioned on a dedicated table support.
  It is a battery powered device, able to measure the air temperature in the spot where it is positioned, generating temperature information which is communicated to the other devices.

Description	Identification	Code
Temperature probe	Free-Sen	9060573

Probe with support

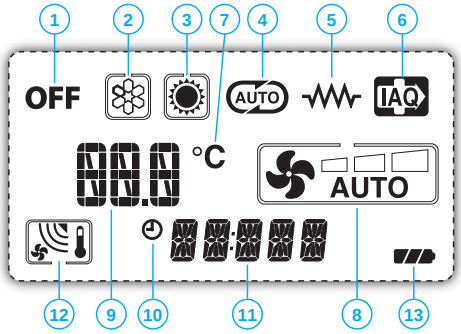
Main features of the remote control

The control enables:

- Fan coil on/off switching
- Fan speed selection (high - medium - low - automatic)
- Summer/winter operation selection
- Valve on/off
- Real time clock setting
- Temperature setting
- Daily switch on/off setting (timer function)
- Enable/disable the timer function
- Activation of the (eventual) electrostatic filter
- Activation of the (eventual) electric heater

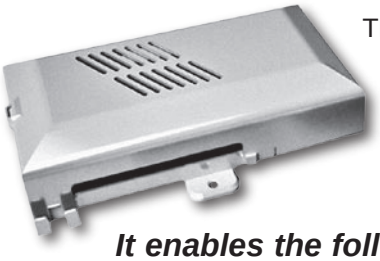
Main information displayed:

1. On-off status
2. Summer operation
3. Winter operation
4. Automatic season change
5. Electric heater
6. Crystall filter
7. Room temperature (with decimal accuracy)



8. Fan operating speed
9. Required/measured temperature
10. Timer
11. Clock
12. Transmission signal
13. Battery level

Main features of the power unit to be installed on the fan coil



The power unit controls the fan and the valves of the fan coil. The power unit receives the information required to control such units both from the remote control and locally.

It enables the following main actions:

- Fan on/off at a set speed
- Fan speed change (fan on/off)
- Water valve/s on/off (1 valve for 2 tube system - 2 valves for 4 tube system)
- Fan speed change operating the water valve/s
- Control of the electric resistance as main heating unit or as integration to the battery supplied with hot water
- Control of the operation of the electrostatic filter (in parallel to the fan)
- Management of the dead zone function for 4-tube systems
- Available functional inputs:
  - *Consent for remote on/off*
  - *Consent for remote Summer/Winter switch (centralized)*
  - *Consent for the activation of the Energy Saving function with setting change*
  - *Minimum probe*
  - *Probe for season change*

Main features of the temperature probe

This device is able to measure the temperature of the air in the spot where it is positioned and to transmit it by means of radio communication to the other devices in the system. It is battery powered and can be freely positioned in the area to be air-conditioned.

Display:

- Measured environment temperature
- Transmission signal
- Clock
- Battery status

DESCRIPTION	IDENTIFICATION	CODE
Infra-red remote control with electronic board fitted on the unit (MV-MO-MVB only)	*IRC-M*	*9060175*
Infra-red remote control with electronic board not fitted on the unit (IV-IO only)	*IRC-S*	*9060176*
ETN +/-3°C with electronic board fitted on the unit	*IRC-ETN-M*	*9060166*
ETN +/-3°C with electronic board not fitted on the unit	*IRC-ETN-S*	*9060167*

The Carisma units can be supplied with a micro-processor managing system operated by an infra-red remote control with liquid crystall display or by a wall-mounted IRC-ETN control.

Integral with the unit is an electronic board with RS485 communicating connection which can control up to 20 units connected between them. The electronic board is of master/slave mode and the serial communicating connection allows the serial connection; in the master/slave connection of more units, it is recommended to install the infra-red receiver on the master unit.

IRC controls are not suitable for Crystall electronic filter and BEL electric heater.

The units with IR control are supplied with room temperature probe and water temperature probe (cut-out thermostat).

The infra-red remote control features the following functions:

- Temperature set.
- Fan speed switch with possible automatic speed selection.
- 24 hours on/off program.
- ON/OFF cooling valve control.
- ON/OFF heating valve control.
- Control of the valves only or of the valves and the fan together.
- Valve control of 2 or 4 pipe systems with winter/summer switch on the infra-red control.
- Valve control of 4 pipe systems with automatic heating/cooling mode selection with 2°C dead zone.
- Activating the sensor connected to the T3 contact of the board (non active in the standard configuration), it works like a cut-out thermostat: fitted between the coil fins it stops the fan when the water temperature is lower than 38°C and it starts the fan when the water temperature reaches 42°C.

The wall-mounted control features the following functions:

- Switch the appliance ON and OFF.
- Set the fan speed.
- Set the range of temperature settings (default +/- 3 °C, modifiable on site up to +/- 9°C).
- Modify the set point determined by the system by a value of +/- X°C.

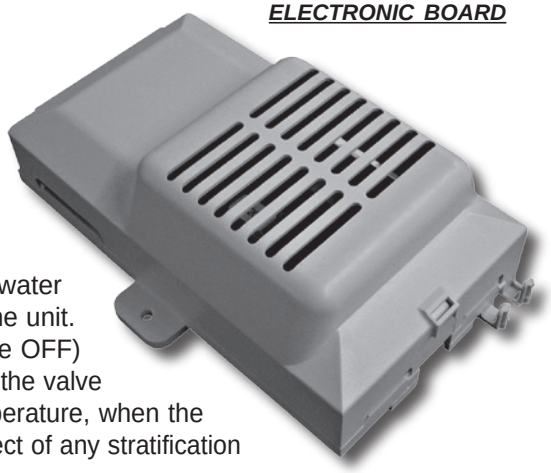
The Maxinet system (see the following pages) can set the operating mode, the set point and all other operating parameters of the unit, as well as display the settings made by the user. The Maxinet system always has priority over the ETN controller. For the correct use of the system, also see the manual for the Fan-coil with remote control and the Maxinet supervision program.

IRC electronic board

The electronic board, fitted inside the electrical panel, can manage different control modes so as to best satisfy the requirements of the installation. These modes are selected by suitably positioning the configuration dipswitches, which define the following main functions:

- **2 pipe / 4 pipe** system
- Operation **without / with** remote control
- Continuous ventilation
- Close valve
  and stop fan in cooling mode (autofan function)
- Close valve
  and stop fan in heating mode (autofan function)
- Close valve and stop fan
  in both cooling and heating mode (autofan function)

IRC
ELECTRONIC BOARD



The autofan function allows the simultaneous ON/OFF control of the water valve and the fan, while at the same time optimising the operation of the unit. When reaching the set point, the controller closes the water valve (valve OFF) and only 3 minutes later stops the fan, so as to correctly compensate for the valve closing time. To prevent the air probe from measuring an incorrect temperature, when the fan is OFF the controller runs a number of fan ON cycles to annul the effect of any stratification of the air in the room.

In two pipe systems, a water probe (T2 accessory) can be installed on the supply pipe to the unit upstream of the water valve. Based on the temperature read in this section of the pipe, the device will select either cooling or heating operation.

The electronic board also features a contact for connection to a window switch or remote enabling signal. When the contact is closed, the unit can operate, when the contact is open, the unit stops. The same contact can be used for starting and stopping the unit from an external timer or any other remote switching device.

In addition, a series of units can be switched ON or OFF at the same time, by using a flip-flop switch connected to the terminals present on the board.

Sensors that require a 12 Volt power supply, for example occupancy sensors, can be connected to other terminals on the electronic board and then to the ON/OFF contacts. The board is able to power external sensors with a maximum current of 60 mA.

INSTALLATION EXAMPLE
WITH INFRA-RED REMOTE CONTROL

A group of Carisma units with IRC electronic board can be connected via a serial link and can consequently be managed at the same time by just one infra-red remote control or IRC-ETN wall-mounted control. Using the special jumper present on the board, one unit must be configured as the master, and all the others as slaves. It is clear that the remote control must be pointed at the receiver on the master unit. To avoid problems, it is recommended to install and connect the receiver only on the master unit.

With infra-red remote control

One control for each unit

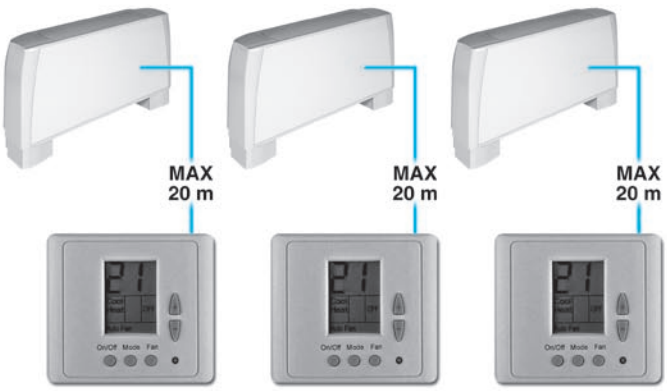
One control for more units (20 units max.)

(Maximum total length of the connection cable = 800 m)

With ETN

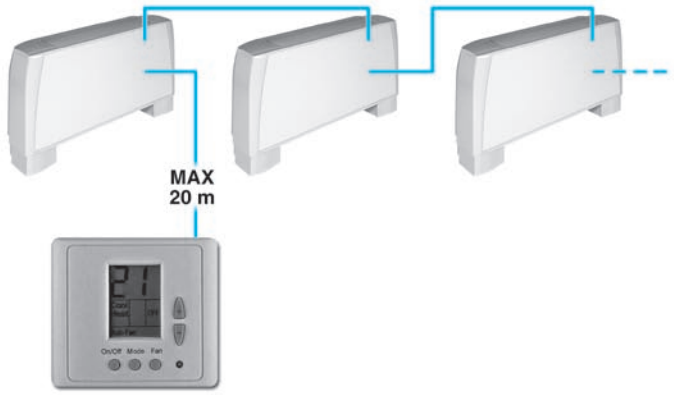
One control for each unit

(Maximum length of the connection cable = 20 m)



One control for more units (20 units max.)

(Maximum total length of the connection cable = 800 m)



T2 Change-Over for infra-red remote control (accessory)

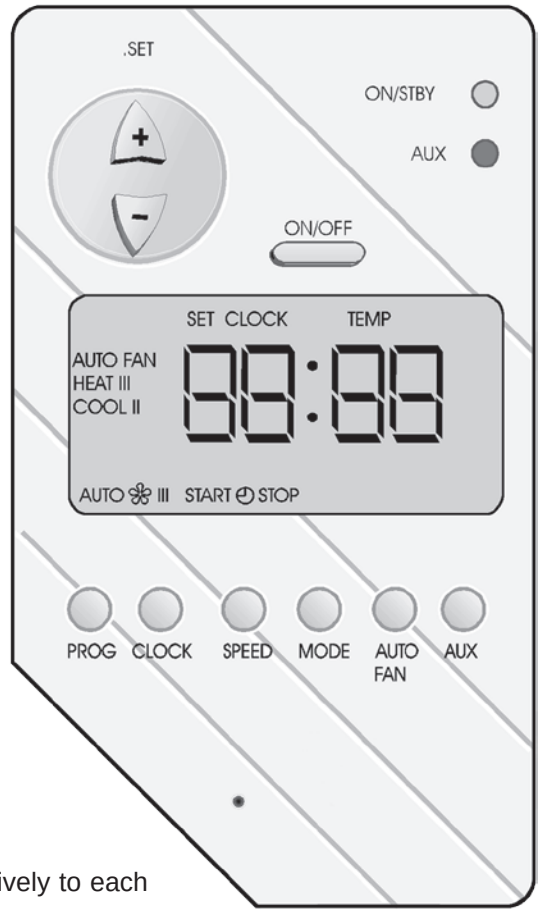
Identification	Code
T2	9079103

Suitable for units with infra-red remote control only.

The NTC sensor, if connected to the T2 contact of the board, works like a change-over: fitted in contact to the supply pipe it controls automatically the winter/summer switch in accordance to the water temperature.

Multifunction control

IDENTIFICATION	CODE
PCR-DI	9079102



Another option available for the serial communication between the units is the possibility to connect up to 60 Carisma units in series (the maximum length of the connection cable must not exceed 800 m) and manage them with just one wall-mounted intelligent PCR-DI controller. The wall-mounted controller can be used to set the operating mode for each individual unit connected, display the operating conditions of each individual unit, and set the ON/OFF time sets for each day of the week. If more than 60 units need to be connected, two or more wall-mounted intelligent controllers must be used. Each wall-mounted controller only manages the units it is connected to.

The PCR-DI control is used to manage a series of fan coils, up to a maximum of 60 units, from one single control point. The PCR-DI control communicates via a serial line with all the units connected, with the possibility of controlling them all together or individually. In fact, the unique address of each individual fan coil means that all the units can be called at the same time, or the individual unit called, to perform the following functions:

- display the current operating mode, the fan speed, the set point
- display the room temperature measured on the individual unit
- turn all the units ON and OFF at the same time or alternatively each unit individually
- change the operating mode (fan only, heating, cooling, automatic changeover)
- change the set point

Each function can then be sent to all the units connected, or alternatively to each individual unit.
Different set points or operating modes can be set for each individual unit.

The PCR-DI panel can also be used for the time management of the units over the week.
Two on times and two off times can be set on the units for each day of the week.

The weekly programming mode can be stopped at any time, returning to the manual setting and then weekly programming mode can subsequently be started again.

Maxinet program for managing a network of IR hydronic terminals

Maxinet is a centralised control system for networks of IR hydronic terminals, based on software that runs on Windows XP Professional Service Pack 2.
The Maxinet software offers a practical and economical solution for managing the terminals, with the simple click of the mouse.
The main characteristics include simplicity of use, an extremely complete and functional weekly program, and the possibility to access the historical operating data for each individual appliance connected.

The program exploits all the potential of our appliances with remote controls, representing an addition to the latter.

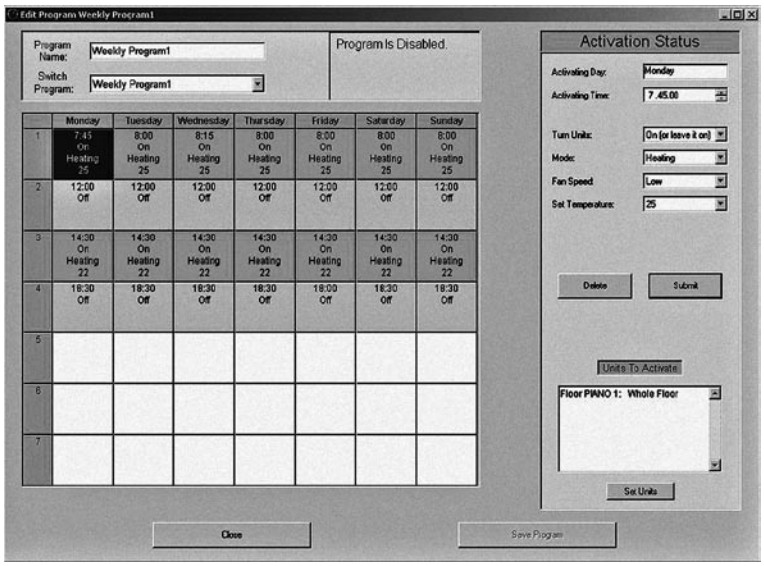
The Maxinet program is a control tool that can be used as a replacement for the remote control, or in parallel, however with the possibility of setting the priority, that is, the settings made using Maxinet can have priority over those made using the remote control.

The program can be used to:

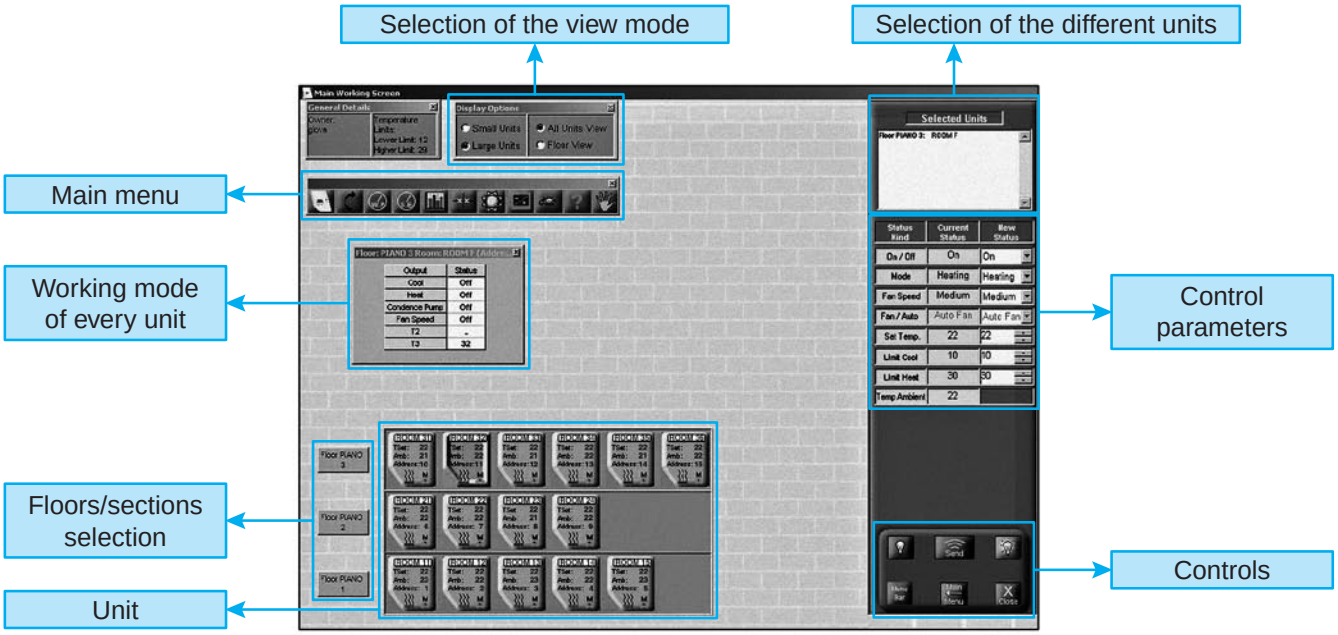
- create uniform logical blocks (groups of units on individual floors, in offices or rooms).
- save weekly programs configured for different types of operation (summer, winter, mid seasons, closing periods etc.); these can then be recalled and activated with a simple click of the mouse.
  Weekly on/off cycles can be set for individual units or groups of units.
- set the operating conditions for each individual unit or groups of units (operating mode, fan speed, temperature setting).
- set the set point limits for each individual unit or groups of units.
- switch each individual unit or groups of units on or off.

The “Weekly Program” can be used to set the unit operating parameters for each day of the week.
Up to 20 different weekly programs can be set.

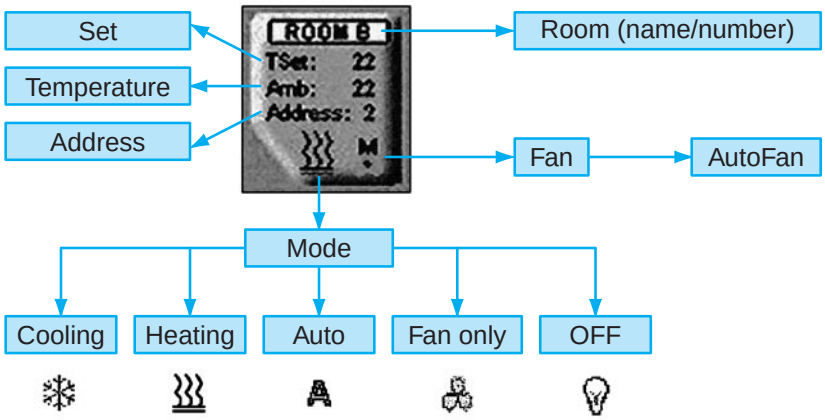
Time bands are available for each day of the week.
The time and the type of operation to be performed by the unit can be set for each band.
The time and the operating parameters can then be displayed before being sent to the unit and implemented.



One especially useful function of the weekly program is to have the program to carry out timed checking routines to identify whether the operating mode or temperature setting have been modified on the terminals, for example using the local remote control. If activated, the routine will reset all the unit operating parameters to the values set in the weekly program.

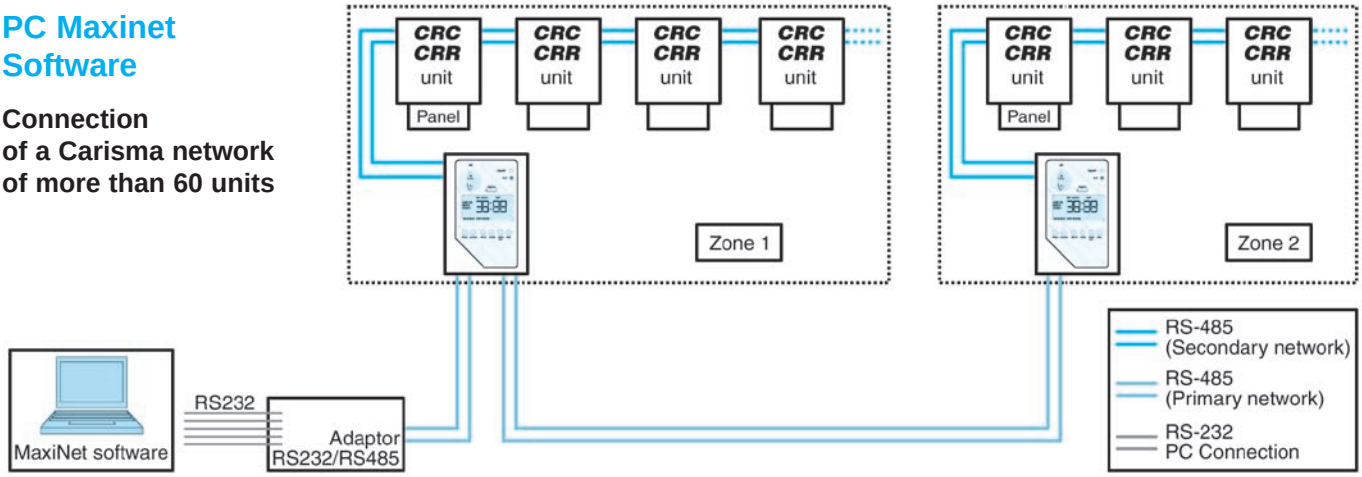


The main program screen can display and interact with the entire network of units. An individual unit, a group of units or the entire network can be called so as to make modifications to the operating mode and the set point. The user can then check the operating status of each individual unit, read the room temperature, the coil temperature and the operating status of the condensate drain pump or any alarms.



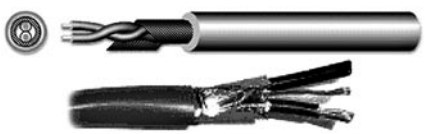
PC Maxinet Software

Connection of a Carisma network of more than 60 units

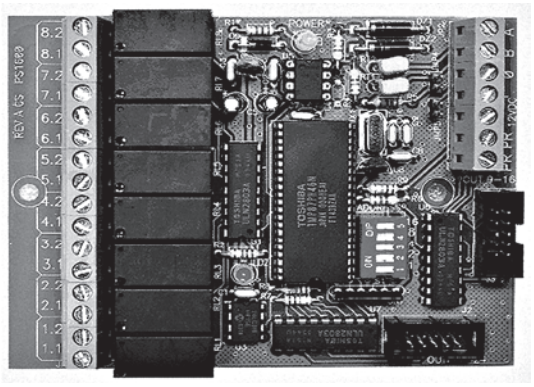


RS 485 serial connection cable

Shielded cable to be used:
Belden 9841, RS-485, 1x2x24 AWG SFTP, 120 Ohm



IDENTIFICATION	CODE
S08R	9079105



In addition to the air-conditioning units, MaxiNet can also work with general output cards.
Each card contains 8 outputs which can be connected to “On / Off” devices.
Inserting a new output card can be done through the regular units setting.
Handling the existing output cards is done through the output cards’ menu, which can be loaded from the working screen’s menu bar. In the menu, choose the “General Outputs Cards” title.
The Out-Put card can be connected in a Maxinet network and controlled by the software. Up to 10 cards can used.

The descriptions and illustrations provided in this publication are not binding:
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CERTIFICATO n.
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WE HEREBY CERTIFY THAT THE QUALITY MANAGEMENT SYSTEM OPERATED BY

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UNITA' OPERATIVE
OPERATIVE UNITS

Via Piave, 53 - 20011 Corbetta (MI)
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IS IN COMPLIANCE WITH THE STANDARD

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PER LE SEGUENTI ATTIVITA'
FOR THE FOLLOWING ACTIVITIES

EA: 18

Progettazione, produzione e assistenza di apparecchiature per il riscaldamento e il condizionamento dell'aria (aerotermi, termostrisce radianti, ventilconvettori e unità trattamento aria) e canne fumarie.

Design, production and service of heating and air conditioning equipment (unit heaters, radiant panels, fan coil units and air handling units) and chimneys.

Riferirsi al Manuale della Qualità per l'applicabilità dei requisiti della norma di riferimento.
Refer to Quality Manual for details of application to reference standard requirements.

Il presente certificato è soggetto al rispetto del regolamento per la certificazione dei sistemi di gestione per la qualità delle aziende.
The use and the validity of this certificate shall satisfy the requirements of the rules for the certification of company quality management systems.

Data emissione	Emissione corrente	Data di scadenza
First issue	*Current issue*	*Expiring date*
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ICIM S.p.A.
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